

Reverse logistics, stakeholders' influence, organizational slack, and managers' posture

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Abstract

Reverse logistics (RL) has strategic importance. However, little is known concerning what motivates firms to adopt RL systems. Drawing on stakeholder theory formulations, organizational slack, and the manager's strategic stance concept, this article develops a model that proposes external, internal, and individual factors that affect the implementation of RL programs. Our framework considers three major explicative variables: the attributes of the stakeholder (power, legitimacy and urgency), organizational slack for RL programs, and the manager's strategic posture. The study draws on a sample of 118 Spanish companies and uses a probit model to determine the influence of these factors on the probability of firms to implement RL systems. The study finds that customers, employees, and the government salience in terms of RL activities and manager's progressive posture have a significant influence on the final decision of implanting RL programs. Conversely, the study finds that shareholder salience negatively impacts the decision.

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1. Introduction

Many studies in logistics assume that the supply chain flow begins with the incorporation of raw materials into the transformation process, and ends with the delivery of the product to the final consumer. However, Ginter and Starling (1978) report that a reverse channel of distribution could be central in business activities. Some studies confirm this assertion. The protagonist role of the consumer (Homburg et al., 2000), the increasing public consciousness and regulations on environmental issues (Henriques and Sadorsky, 1996), and the change in the strategic focus of firms (Madsen and Ulhoi, 2001) considerably encourage activities such as the return, recondition, refurbish and recycle of products and packaging. All these activities

constitute the most common procedures of Reverse Logistics (RL) (Rogers and Tibben-Lembke, 1999; Stock, 1992).

RL gains importance in economic terms. For instance, the value of returned products to the retail sector of the United States exceeded 100 billion US dollars in recent years (Stock et al., 2002). From a strategic point of view, many firms have begun to consider these programs as potential to gain and maintain competitive advantage, leading to proactive initiatives (Marian, 1998). However, the determinants of these initiatives remain largely unexplored by the academic community. Drawing on diverse but complementary theoretical formulations, we propose that RL programs result from a combination of external, organizational, and individual factors. Because the activities of RL involve multiple relationships between different stakeholders (e.g. suppliers, customers) and the firm, we emphasize the role different stakeholders have on the RL systems implementation. Furthermore, we analyze both the role of organizational slack and the executive's strategic stance as potential determinants of RL programs. Empirically we assess the impact of these factors on the probability of firms to adopt RL systems. The results suggest that stakeholder pressures and a

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proactive stance of managers increase the odds that companies will implement RL programs. However, the weight and the significance of different measures of organizational slack were not always found to be a relevant factor in this decision.

Research and analysis provide three important contributions to the existing literature. First, the study empirically examines the determinants of implementation by providing clarification of the RL decision making process. Second, the chosen approach combines stakeholder theory with the concepts of organizational slack and manager's strategic posture by offering a solid theoretical framework on which future research can be developed. Finally, the article offers a European perspective on RL in extending the existing empirical research.

To illustrate the study the discussion begins by examining the concept of RL through a review of previous research and by presenting general motivation for RL. In support the article outlines a model and proposes three working hypotheses, which a study tests on a sample of 118 Spanish firms from the automotive component industry. The article concludes with a discussion of the theoretical and practical significance of the study, its limitations, and a proposed agenda for future research.

2. Background on reverse logistics

2.1. The concept

Perhaps because of its rapid trajectory of significance the concept of RL has not been homogeneously defined (Fernandez, 2003). We can identify definitions that exclusively consider economic or environmental aspects of RL; and other explanations that capture both aspects simultaneously (Kroon and Vrijens, 1995; Rogers et al., 1999; Thierry et al., 1995). There are also definitions that stress specific traits of the processes of RL; such as related activities, the materials involved, and points in the supply chain. For instance, Carter and Ellram (1998) emphasized the environmental aspect of RL and defined it as the "process whereby companies can become more environmentally efficient through recycling, reusing, and reducing the amount of materials used" (p. 85). Alternatively, Rogers and Tibben-Lembke (1999) highlighted the economic aspects of RL. They argued that RL is "the process of planning, implementing, and controlling the efficient, cost effective flow of raw materials, in-process inventory, finished goods and related information from the point of consumption to the point of origin for the purpose of recapturing value of proper disposal" (p. 2). Integrating the economic and environmental viewpoints, Thierry, Salomon, Nunnen, and Wassenhove (1995) coined the term of "Product Recovery Management", which stresses the recovery of economic and ecological value of discarded materials, products and components. More recently, Guide and Van Wassenhove (2003) expanded the notion of the traditional Supply Chain by defining the Closed-Loop Supply Chain concept, which integrates both the forward and reverse supply chains.

For the purpose of this present article, we opt for a more general conception of RL. In this sense, the European Working Group on Reverse Logistics defines RL as "the process of

planning, implementing and controlling flows of raw materials, in process inventory, and finished goods, from the point of use back to a point of recovery or point of proper disposal" (REVLOG, 2004). This definition implicitly depicts the relationships between the firm and other participants in the supply and value chain. For instance, the flow of raw materials is related to suppliers and the stream of finished goods clearly involves customers and distributors. Hence, activities related to RL imply complex relationships between individual firms and multiple stakeholders.

2.2. Literature and strands of research

The literature on RL is diverse and heterogeneous. In its origins, this body of research was mainly undertaken in explorative terms. The evidence was mostly anecdotal and diffused through professional publications (Carter and Ellram, 1998; Knemeyer et al., 2002). In the academic arena, it was not until recent years that RL became an issue of importance. However, with the exception of a few studies (e.g., Carter and Ellram, 1998; Daugherty et al., 2001, 2002), most of the work done intends to either develop mathematical models, focus on case studies, or simply outline broad overviews of implementation.

Dowlatshahi (2000) defines five categories of the literature on RL: (i) studies wherein the authors attempted to provide the basic concepts and a general summary of RL (e.g. de Brito and Dekker, 2004; Kopicki et al., 1993; Rogers and Tibben-Lembke, 1999; Stock, 1992, 1998); (ii) scholarly works addressing quantitative approaches (Fleischmann et al., 1997; Fleischmann et al., 2000; Minner, 2001). The techniques and models used in these types of articles have enhanced different aspects of the RL systems; such as extending product life cycle or remanufacturing operations; (iii) papers dealing with more specific logistical issues such as distribution, warehousing, and transportation (e.g. Jahre, 1995; Pohlen and Farris, 1992); (iv) examinations of company profiles illustrating that some manufacturing technologies have a critical role in the performance of RL systems (e.g. Thierry et al., 1995); and (v) research into applications of RL in goods produced, for instance, of plastics, papers, metals, and other materials (e.g. Kroon and Vrijens, 1995).

Although some of these authors provide a strong base to develop RL programs and their subsequent policies, an analysis of the factors that affect the decision process of implementation remains, at best, limited. Additionally, little theory-based research has focused specifically on RL (Daugherty et al., 2001).

2.3. Motivations for reverse logistics

Earlier literature depicted three main driving forces for the use of RL: economic, corporate citizenship, and legislation (de Brito et al., 2004). Economic forces indicate that RL activities such as remanufacturing, reuse of materials, and product refurbishing have the potential to improve profitability through cost minimization, access to new consumer segments, and increased revenues (see Stock et al., 2002). In this context, Guide and Van Wassenhove (2001) cited the company Recellular,

mentioning that this firm has remanufactured over a million phones for almost 10 years, finding a profitable market in this activity. Even without instantaneous profit, RL may be helpful to generate potential intangible benefits like corporate image improvement, legislation anticipation, or competitive advantage creation (Stock et al., 2002; Toffel, 2004), which are expected to secure the firm's future income.

Corporate citizenship, also called "extended responsibility" (de Brito et al., 2004), refers to the search for sustainable development from an environmental and social point of view. A case in point is the shoe company Nike. It encourages consumers to return their used shoes, which are then shredded and made into basketballs for the less fortunate (Rogers et al., 1999). The application of certain methods of waste manipulation, which is better in an environmental sense, is another good example of corporate citizenship.

The legislation issue refers to the norms imposed by any jurisdiction which dictate the legal obligations of a firm. Traditionally, Europe has been very active in this sense. For instance, in 1991 Germany imposed the first mandatory take-back program with its "Ordinance on the Avoidance of Packaging Waste". Within this law the manufacturer is responsible for collecting, sorting, and recycling the packaging of their products. Several years later the European Union implemented this legislation as the "Directive on Packaging and Packaging Waste." According to this enactment a firm within a Member State has five years to comply with the requirements concerning packaging waste. A minimum of 50% of the waste must be recovered, 25% of the total recycled, in addition to recycling at least 15% of each material type. (Toffel, 2003).

These three forces are not mutually exclusive. Instead they are very highly related and boundaries between each may be blurred (Carter and Ellram, 1998). For instance, the automotive industry's case showed that battery returns helped to reduce waste and production costs, and simultaneously enhanced customer satisfaction (Marien, 1998). Similarly, the recycling process of a firm may be as a consequence of an increased environmental concern in a society, while improving the firm's corporate image. As an example, Black and Decker's use of RL through recycling generated one million dollars in revenue, and simultaneously enhanced its environmental performance (Andel, 1997).

While most researchers would agree on these three general motivations for RL, conclusions regarding their origins are rather unclear. Do they emanate from inside the firm or from the outside? For example, are proper disposal programs initiated by the firm, or are they a response to the environmental claims of non-governmental-organizations (NGOs)? Alternatively, are they a consequence of both?

Another unresolved issue concerning RL is why some firms proactively implement such programs while others do so reactively. Whereas many firms wait to be regulated before applying any RL programs (Daugherty et al., 2002), others make proactive attempts to do so (Marien, 1998). This evidence indirectly suggests that the strategic stance of the decision makers in a firm (e.g. senior management) plays a key role in determining implementation. Previously this issue has received very little attention in the literature. Following this line of

argument, we should consider both the internal and external factors which influence RL implementation, in order to answer our research question.

3. Theoretical framework and hypotheses

In this section the article argues that the interaction of external, organizational, and individual factors determine the RL implementation. External forces stem from the varying degrees of pressure by stakeholders, and the strength of their claims' depends on their salience. The study also considers the availability of resources as the key organizational factor which determines activities of RL. Finally, the article analyzes how the strategic preferences of managers impact the final decisions regarding the implementation of RL programs.

3.1. A reverse logistics model

3.1.1. External pressures. A stakeholder approach

Freeman (1984) defines a stakeholder in an organization as "any group or individual who can affect or is affected by the achievement of the organization's objectives" (1984: 46). The survival and success of a firm is a consequence of its capacity to establish and maintain a relationship with its network of stakeholders (Clarkson, 1995; Post et al., 2002). According to this view, the manager is responsible for the supervision of all stakeholders' claims and not only of the shareholders' welfare. It is her responsibility to coordinate the constellation of competitive and cooperative interests, which give the firm its *raison d'être* (Hill and Jones, 1992).

In this sense, literature on RL has stressed the importance of different pressuring groups in the development of such programs (e.g. Carter et al., 1998; Drumwright, 1994; Sidell, 2003; Smith et al., 1997). The requirements of different stakeholders like suppliers, customers, governmental agencies, NGOs (Carter et al., 1998; Toffel, 2003) and shareholders (Guide and Van Wassenhove, 2001) can be seen as instigators of RL implementation. In other words, stakeholders have various claims which the firm can satisfy through RL activities. For instance, customers may claim longer periods for warranties, resulting in returns and repair activities. Recycling may satisfy NGO's demand for responsible environmental behavior. The shareholders' profit maximization goal requires cost control and increased profit, which may be obtained through handling recalls and reuse of material. These examples help to illustrate the special suitability of stakeholder theory for capturing how external forces encourage RL. These ideas are graphically represented in Fig. 1.

Stakeholders might achieve some of their claims through activities of RL. Thus, the first key question is how firms identify and prioritize different stakeholders. Mitchell et al. (1997), after an in-depth revision of the literature, concluded that the salience of an interest group depends on the manager's perception of three stakeholder attributes: power, legitimacy and urgency (See for an empirical demonstration in USA (Agle et al., 1999), and in the Spanish context (Fernandez and Nieto, 2004)). These characteristics are further defined as the power to

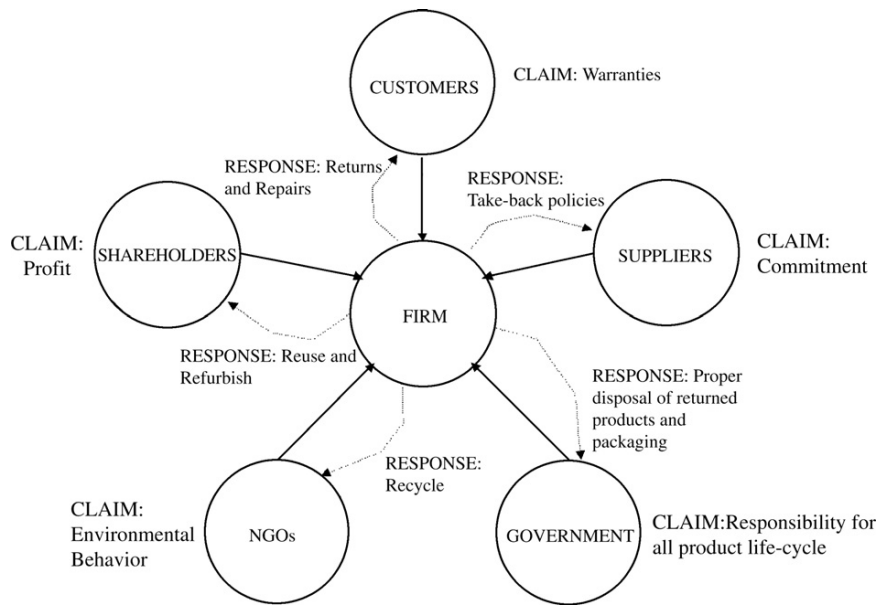


Fig. 1. Stakeholders' claims and firm's responses.

influence the firm, the legitimacy of the stakeholders' claims, and the urgency of the stakeholders' demands as related to the organization. Consequently, the notoriety of stakeholders improves as they acquire power, legitimacy and urgency, and as the manager perceives these attributes (Mitchell et al., 1997). In other words, as the importance of stakeholder increases, their level of influence on the firm's behavior also increases. Furthermore, stakeholder salience is issue-based (Buysee and Verbeke, 2003), implying that some stakeholders may have more influence on certain topics. As a result, the present article expects that claims toward RL activities of salient stakeholders will have a positive impact on the decision of the firm in implanting RL systems. Based on this logic, this study presents the first hypothesis.

Hypothesis 1. Stakeholder salience in terms of RL has a positive influence on the probability of firms to implement RL systems.

3.1.2. Organizational factors. Availability of resources

The previous section establishes the importance of stakeholders in RL, and how their claims influence the firm to adopt these types of systems. However, the intensity of the stakeholders' pressure is not enough to reach a final conclusion regarding whether the firm will take specific action (Ullmann, 1985). Organizational and individual factors might be determinant in the final decision of implementing RL programs. Aspects such as the allocation of resources to RL (Daugherty et al., 2001) and the strategic posture of the manager *vis à vis* RL (Kopicki et al., 1993) are relevant in the decision to implement RL activities.

According to conventional thought, the availability of resources (March and Simon, 1958; Ullmann, 1985) is a key organizational factor that determines the pursuit and successful

implementation of business opportunities. This factor is of special importance to this research since RL is resource intensive (Daugherty et al., 2001; Rogers and Tibben-Lembke, 2001). Economic funds are vital for the development of RL systems. Estée Lauder, for instance, needed \$1.3 million for its RL system of scanners, business-tools and data warehouse (Caldwell, 1999).

Availability of resources can be approached through the concept of organizational slack. Organizational slack is the excess of actual or potential resources which help an organization to overcome internal or external pressures (Bourgeois, 1981). The slack stems from the amount of resources in excess of the minimum necessary to achieve a given level of production (Nohria and Gulati, 1996). This slack improves the firm's capacity of adaptation to the environment (Meyer, 1982). At the same time, this excess enhances the innovative capacity of firms (Cyert and March, 1963; Sharma, 2000) and their proactive strategies (Chakravarthy, 1982).

The organizational slack concept seems particularly appropriate for systems of RL. These systems require the organization's labor, time, material, machinery, and external services. New technologies, techniques, transportation, and information systems may also be necessary to launch the program. As a consequence, this study expects that as the organizational slack increases and the resources for RL are more abundant, the likelihood of such activities being implemented increases. This idea is depicted by the following hypothesis:

Hypothesis 2. Organizational slack will have a positive influence on the probability of firms to implement RL systems.

3.1.3. Individual factors. The strategic stance of the decision maker

As the final part of the model, the article considers the individual strategic preference of the decision maker as an

additional explanatory factor in RL implementation. Both theoretical (Cyert and March, 1963; Child, 1972; Hambrick and Mason, 1984) and empirical research (Aragon-Correa et al., 2004; Chaganti and Sambharya, 1987; Wiersema and Bantel, 1992) have arrived at the same conclusion: organizational strategic profiles reflect the individual preferences of senior management. Because managers reside at the strategic apexes of their firms, their personal views are very likely to influence the strategic decisions of the firm.

In general terms, the manager and the senior manager team can adopt two opposite strategic attitudes. At one end is the manager with a progressive attitude and standing opposite the manager with a conservative attitude. The progressive attitude is characterized by an active search for the satisfaction of stakeholders' claims, a permanent control of the environment, a continuous pursuit for competitive advantage and business opportunities, and less aversion to risk. This attitude is associated with proactive pattern of behavior. In contrast, the conservative attitude is associated with greater aversion to risk, a commitment to maintain the status quo and therefore with a reactive pattern of behavior (Bantel and Jackson, 1989; Crant, 2000; Gupta and Govindarajan, 1984; Karake, 1995; Wiersema and Bantel, 1992).

Earlier literature has identified these polar stances in regards to RL. Firms with a passive posture will only implement RL activities as a consequence of external or internal pressures, which are difficult to elude and lead to reactive execution of programs (Kopicki et al., 1993). A passive posture, in some firms, could be due to what Rogers and Tibben-Lembke (1999) referred to as "management inattention" (pp. 14), that is, the management's lack of interest in RL. These authors argued that management inattention is one of the main barriers in adopting programs of RL. On the other hand, a proactive firm does not wait for unavoidable pressures before implementing RL systems (Kopicki et al., 1993). Rather, the decision maker takes the lead on this type of activity. Hart (1995) provides a good example of a proactive RL initiative. The German automobile company BMW started a design-for-disassembly program in 1990, which was oriented towards the recovery and recycling of car components. BMW anticipated a proposed governmental take-back policy and created an exclusive network with the few sophisticated dismantler companies in Germany. By being the precursor in the industry, BMW not only anticipated the future policy but also gained a cost advantage over competitors, who were left to deal with inferior recycling firms, or had to invest in their own dismantling infrastructure. BMW's early move enabled its executives to establish a national standard, and obligated other car companies to follow this initiative, but at significantly higher costs (Hart, 1995).

Based on the above paragraphs, the present study argues that managers with a progressive strategic posture will be more willing to implement RL. Contrarily, a manager with a conservative strategic posture will avoid changes and risks and, in turn, will be more unlikely to embark in these activities. This argument is summarized in our third hypothesis:

Hypothesis 3. A progressive strategic posture of the manager will have a positive influence on the probability of firms to implement RL systems.

4. Methods

4.1. Sample and data

The research analyses firms from the auxiliary automobile industry in Spain. A deep study of the industrial activities classified in the SIC codes (Appendix A shows the final list of selected activities) was carried out to determinate firms that belong to auxiliary automobile industry. Previous research related to supply chain management in general and RL in particular provides evidence that the sector is well-suited for this analysis. For instance, Benton and Maloni (2005) show that, within the automobile industry, supplier satisfaction is mainly driven by the type of buyer-supplier power relationship rather by their performance. Similarly, Daugherty, Richey, Hudgens, and Autry (2003), conducted their study in the automobile aftermarket industry and found that the trust and commitment relationships improve the reverse logistic performance.

The starting point is the 1150 biggest firms (in terms of sales) in the Spanish auxiliary automobile industry. From this population, the study drew a random sample of 200 companies. The most conservative estimate of p (0.50) was used in the sample size calculation for a single proportion. The confidence level was set at 95%. The maximum tolerable error was equal to 6,3%, a value that is considered more than acceptable. This study develops a questionnaire and uses the financial statements to gather information regarding the different theoretical constructs.

The process of designing the questionnaire consists of two stages. The first one includes an extended literature review, wherein the study analyses previous studies which measure the same theoretical construct. The initial questionnaire takes into account results of this literature review, as well as discussions with colleagues and experts. The second stage comprises four meetings with auxiliary automotive managers, taking the draft questionnaire as the guide. The aim of these interviews is to ensure that items selected are accurately understood and that they adapt to the common practice in the industry. Interviews help to modify some items and incorporate new ones in collaboration with the targeted public. After developing the questionnaire, 158 out of the 200 possible questionnaires were completed through personal interviews with the Chief Executive Officers (CEOs) of the firms. The survey has taken place between November, 2004 and February, 2005. Data from the financial statements for the years 2002 and 2003 complement the information obtained from the questionnaires. These statements come from the Central Mercantile Register (Registro Mercantil Central), which is the official institution that gathers information from companies across the geography of Spain. Financial statements were available for 118 firms, out of the 158 firms that participated in the questionnaire. These firms compose this study's final sample.

4.2. Measures

4.2.1. Reverse Logistics implementation (RL)

This is the dependent variable. In order to obtain a valid measure of RL implementation RL has to have the same

meaning and significance for all the interviewees. Thus, the questionnaire begins with the presentation of the RL program or system definition. In the present study, RL programs are the return process management of raw materials, in-process inventory, finished goods and/or related packaging materials with the objective of recycling, reusing, reducing, repairing, reselling and/or recapturing value of proper disposal for the amount of materials used. Next, managers are asked to state whether or not the firm had implemented a formal program or system of RL. Answers are captured in a dummy variable that assumes value 1 if the firm has implemented a RL program and 0 otherwise.

4.2.2. Stakeholder salience in terms of RL (SS)

In order to make this construct operational, two issues have to be specified: first, why the study selects some stakeholders and not others; and second, how the article measures the salience in terms of RL to each stakeholder. Concerning the first issue, this approach follows Freeman's (1984) lead, and selects generic stakeholder groups: customers, government, owner, employees and local community. These stakeholders could attract much of the managers' attention throughout various types of firms. Agle et al. (1999) demonstrate the relevance of these stakeholders in relation to their salience in general, while Fernández-Gago and Nieto-Antolín (2004), demonstrate such relation with regard to environmental issues, and the managers interviewed in the pretest-stage have paid specific attention to the Spanish auxiliary automobile industry.

To determine the salience of the stakeholder in terms of RL, the study creates an index that accounts for three main components. First, the index considers the different theoretical dimensions of stakeholders' salience: the degree of each stakeholders' power, legitimacy and urgency (Mitchell et al., 1997). These attributes are captured by adapting to the Spanish context the scale as developed by Agle et al. (1999). Second, the index takes into account the relative importance of these attributes for each stakeholder. Previous research has assigned equal weight to these components. However, the relevance of these attributes is likely to be different and vary across the stakeholder group. The study constructs weights for each attribute and for each stakeholder, based on the study of Agle et al. (1999), with the main purpose to identify these differences and by adopting an ethic approach (Malhotra et al., 1996) as characterized by the presence of universals. Lacking a better measure, this article assumes that this approximation is superior to simply assigning equal weights. This approach coincides with the recommendation of previous studies for cross-cultural research (Gupta and MacMillan, 2004; Javidan and Carl, 2004). Finally, the research takes into account the relationship between the fulfillment of the stakeholders' demands and the implementation of RL activities from the managers' point of view. To capture this component, the study has explicitly created an item to be subrogated in the role of the RL to satisfy the stakeholders' exigencies. All the items are valued using a Likert scale (1=strongly disagree–7=strongly agree).

As a consequence, the final measure for each stakeholder salience in terms of RL implementation is obtained using the following formula:

$$SS_i = r_i * \sum_{k=1}^3 w_k * a_k.$$

Where SS_i is the stakeholder salience in terms of RL for stakeholder i , r_i is the degree of satisfaction that stakeholder i would obtain with the implementation of RL, w_k is the weight for the attribute k (power, legitimacy, and urgency), and a_k value of attribute k .

4.2.3. Organizational Slack (OS)

The analysis uses four indicators of organizational slack, taken from previous studies (see Bourgeois, 1981; Hambrick et al., 1996; Singh, 1986). Then, the paper values companies' capabilities to implement programs of RL. Concerning financial statements, the study identifies the following indicators: working capital as a percentage of sales, debt as a percentage of equity, general and administrative expense as a percentage of sales, and net profits. The study assumes that all of these measures will have a positive effect on the probability of RL implementation, except for debt as a percentage of equity, for which the study expects a negative sign. The study uses data based on two-year averages prior to the moment when the questionnaire takes place, that is, 2002–2003. Such averages also provide a robust view that avoids spurious effects and data fluctuations commonly observed in cross-sectional or lag studies (Balkin et al., 2000; Tabachnick and Fidell, 1996).

4.2.4. Manager's strategic posture (PROACTIVITY)

The study departs from the previous section definition of manager's progressive or conservative attitude and proactive–passive behavior of firms. Then, the article considers a set of five different items which managers in the pretest-stage helped to create with the aim to encapsulate the construct *strategic posture of the manager*. Since this construct owns a cognitive and behavioral dimension, two items illustrate the concept of progressive and conservative attitude, while the other three were measure the proactive and passive behavior of companies (see Appendix B). The items are valued using a Likert scale (1=strongly disagree–7=strongly agree), leaving the use of the average of the five items for subsequent analysis.

4.2.5. Control variables

Similar to standard controls in much of the academic research, the study controls for firm size, and economic performance. The firm's total employees on a log scale represent Size, and return on equity (ROE) represents economic performance.

4.3. Data analysis and model specification

To test the hypotheses, the study uses probit analysis due to the binary nature of the dependent variable. Probit models assume normality in the distribution of errors. Although the normality assumption should only be taken as an approximation,

the probit model provides a useful descriptive model for the binary event that a firm implement RL programs. The general specification captures the effect of each stakeholder salience (SS) in terms of RL, organizational slack (OS), and the strategic posture of managers (PROACTIVITY) on the probability of implementing RL programs (RL). As a consequence, the article considers the following probit model:

$$\Pr(RL_i = 1) = \Phi(X' \beta).$$

Where Φ is the cumulative normal distribution function and $()$ follows this specification:

$$P(RL_i) = \beta_0 + \beta_1 \text{Size} + \beta_2 \text{ROE} + \sum_{k=1}^5 \beta_{2+k} \text{SS}_i + \sum_{k=1}^4 \beta_{7+k} \text{OS}_i + \beta_{12} \text{PROACTIVITY}.$$

In terms of the significance of the coefficients, Hypothesis 1 holds whenever β_3 – β_7 are positive, while Hypothesis 2 works if coefficients β_8 , β_{10} , β_{11} are positive, and β_9 is negative. Finally, Hypothesis 3 is confirmed when β_{12} is positive in the specification.

The construct validity in the present study rests in the process whereby the measurements are developed: extracting the scales and measurement of the previous literature and consulting with members of the population studied to adapt these items or develop new ones in agreement with the reality in Spain. Notwithstanding scales, Cronbach's alpha coefficients are calculated to value the internal validity of the items analyzed in the questionnaire. On the other hand, in relation to the discriminant validity the study considers that where the correlation between two scales is lower than the reliability of each scale, the degree of validity is acceptable (Chan and Cui, 2004; Daugherty et al., 2003; Gaski and Etzel, 1986; Gaski and Nevin, 1985).

5. Results

Table 1 reports reliability and shows Cronbach's alpha coefficients for the measures of stakeholder salience and PROACTIVITY.

Table 1 shows that in every case the coefficient alpha is higher than its correlation with the rest of the scales. In addition, relating to reliability, the alpha coefficients fluctuate from 0.65 to 0.82. These reliability coefficients can be considered

acceptable given the early stage of research with some of these constructs (Nunnally, 1978; Smith et al., 1991). Table 1 also shows that customers are the stakeholders with the highest score in salience, followed by shareholders and employees.

Table 2 reports means, standard deviations, and correlation between variables analyzed in the present study.

Table 2 shows 28% of the firms in the sample have implemented a formal RL system. Analysis of the correlation matrix shows that saliences of all stakeholders are positive and significantly correlated with RL implementation, providing initial support for Hypothesis 1. Two of the measures of organizational slack (Expenditures/Sales and Net profit) have the sign as predicted in Hypothesis 2, but are insignificant. The other two measures have opposite expected signs and are also trivial. Furthermore, a progressive strategic posture of the manager is highly associated with RL implementation, suggesting preliminary support for Hypothesis 3.

Table 3 summarizes the results for RL implementation, based on the probit regressions. The specification in column A includes the control variables. Column B adds variables proxying for the salience of each stakeholder. Columns C and D replace the latter set of variables describing the firm's resources and the executive progressiveness, respectively. Finally, column E is the broadest model, which includes the sets of variables examined in A through D.

Column A captures the impact of control variables on the dependent variable. It shows that the size of the firm has a positive but minor impact on the probability of implementing RL programs, while financial results have a negative influence on this possibility, suggesting that RL programs may be implemented after a period of poor performance. These results are constant throughout all models.

Column B shows the coefficients for stakeholder salience and their individual impact on the likelihood of implementation. The article finds that the coefficients for customer, employees, and government salience are positive and significant. The results are confirmed in the full model (column E), where the customer salience has the biggest coefficient of all stakeholders' and the most significant ($p < 0.001$), followed by employees ($p < 0.01$), and government ($p < 0.05$). These results support Hypothesis 1. However, contrary to the study expectations, the impact of shareholder salience is negative and marginally significant ($p < 0.1$), whereas community salience is not significant, providing no evidence to the first hypothesis. Overall, results provide mixed support for Hypothesis 1.

Table 1
Evidence of items reliability and discriminant validity^a

Construct	Items	Mean	Sad.	1	2	3	4	5	6
PROACTIVITY	5	5.01	0.82	(0.67)					
Customer-salience	3	4.29	1.43	0.146	(0.71)				
Government-salience	3	3.37	1.42	−0.26	0.21*	(0.66)			
Shareholder-salience	3	4.89	1.50	0.231*	0.52*	0.19*	(0.73)		
Employees-salience	3	3.98	1.27	0.252*	0.34*	0.17*	0.45*	(0.65)	
Community-salience	3	2.16	1.43	−0.13	0.18*	0.40*	0.19*	0.21*	(0.82)

n 158 (full sample). Values calculated with the reduced sample (*n* 118) did not change significantly.

*Correlations are significant at 0.1 level.

^a The quantities in the main diagonal are the coefficient alphas.

Table 2
Descriptive statistics and correlations

	Mean	S.D	Min	Max	1	2	3	4	5	6	7	8	9	10	11	12
1 Performance	0.29	1.25	-3.33	8.88												
2 Size	3.32	1.44	0.00	8.52	-1.5 [†]											
3 RL implementation	0.28	0.44	0.00	1.00	-1.5 [†]	11										
4 Customer salience	17.90	11.71	2.00	43.77	0.1	18 [†]	40***									
5 Employee salience	12.59	9.44	1.00	37.56	0.4	06	25***									
6 Shareholder salience	17.61	12.57	1.00	49.00	-0.1	12	18 [†]	44***								
7 Government salience	14.93	10.82	1.90	39.25	-0.1	13	30***	53***								
8 Community salience	8.37	9.60	1.00	35.16	0.5	05	15 [†]	31***	45***							
9 Working capital	0.14	0.31	-1.24	2.56	-2.5**	05	-0.1	02	47***	65***						
10 Debt	0.60	0.44	-3.37	1.40	0.5	-22**	02	-0.8	57***	40***	-0.2					
11 Expenditures/sales	0.09	0.06	0.00	0.37	-0.6	16 [†]	02	01	-0.1	-0.1	-0.1	07				
12 Net profit ^a	672.9	2971.2	-3247.4	28000	0.4	50***	04	11	-0.2	-0.4	-0.1	-0.3	12			
13 PROACTIVITY	5.14	0.77	3.00	6.67	-1.8*	06	22*	04	02	18 [†]	09	07	-0.4	-0.6	-0.9	-0.2

Values are presented in thousands of euros

n = 118

^a values are presented in thousands of Euros

[†] *p* < 0.10, * *p* < 0.05, ** *p* < 0.01, *** *p* < 0.001

Table 3

Results of probit analysis on reverse logistic implementation^a

Variable	Dependent variable				
	Reverse logistics implementation				
	A	B	C	D	E
Controls					
Economic performance	-.66 [†]	-1.48*	-.66 [†]	-.63 [†]	-1.65*
Size	.09	.38	.09	.09	-.01
Stakeholder salience					
Customer		.05***			.07***
Employee		.03 [†]			.04**
Shareholder		-.03 [†]			-.05 [†]
Government		.04*			.04*
Community		-.02			-.02
Organizational slack					
Working capital			-.25		-.98
Debt			.08		.21
Expenditures/sales			.43		5.37 [†]
Net profit			1.3e-9		1.7e-7*
Executive orientation					
PROACTIVITY				.39**	.70**
Log likelihood	-74.36	-51.24	-74.13	-71.58	-44.82
Pseudo- <i>R</i> ²	.05	.27	.05	.09	.36
χ^2	7.85 [†]	37.36***	8.3	13.40**	50.23***

[†] *p* < 0.10 * *p* < 0.05 ** *p* < 0.01 *** *p* < 0.001.

^a Sample size *n* = 118.

Column C depicts the coefficients of the different measures of organizational slack, all of which are insignificant. However, Expenditures/Sales (*p* < 0.1) and Net profit (*p* < 0.05) are positive and significant in the full model. These results provide weak support for Hypothesis 2.

Column D tests the impact of the progressive strategic posture of the manager on the probability of implementing RL programs. Parallel to the article expectations, the study finds that the progressive strategic posture of the manager has a positive and significant influence (*p* < 0.01) on both individual and full models, providing strong support for Hypothesis 3. Finally, it is important to note that the full model explains 36% of the total variance and is highly significant (*p* < 0.001). High correlations between salience measures could lead to potential multicollinearity problems. In order to avoid these problems, the present study includes a sensitive analysis that eliminates variables in different steps of the estimations. In general, results hold.

6. Discussion and conclusion

This article has investigated the antecedents of RL implementation. Based on stakeholder theory, the concepts of manager's strategic stance and organizational slack, the study suggests that the probability of firms implanting RL systems depends on the stakeholder salience, the availability of resources of the firm, and a progressive strategic posture of the manager. Overall, the study validates the theoretical contention. Customers, employees, and the government salience in terms of RL activities have a significant influence on the final decision of implanting programs of RL. Conversely, shareholder salience impacts negatively. One possible explanation is that RL programs often require long-term

investments, which are likely to hinder short-term profits. As a consequence, shareholders may be reluctant to engage in investments with uncertain pay-offs. Relatedly, the study finds that past economic performance has a negative impact on the odds of implementing RL programs. This suggests that managers may opt to implement RL programs in order to satisfy the claims of the customers or the community as a way to gain legitimacy with them when shareholders are negatively affected, that is, after a period of poor economic results. This reinforces the idea of RL as an important strategic issue for managers.

Some measures of organizational slack increase the odds of implementing such programs. However, the magnitude and the significance of organizational slack depend crucially on the measure used. These differences might be explained considering the multidimensional nature of the concept and the consequent difficulty in choosing an accurate measure (Dutta et al., 2005). Finally, the results confirm anecdotal evidence of previous studies (Kopicki et al., 1993) that the strategic stance of executives is relevant in deciding whether to implement programs of RL.

6.1. Implications for research

The contribution of the study to existing literature is threefold. First, we present a theoretical model that simultaneously captures the external, organizational, and individual factors. Originally, studies in RL were descriptive and based on anecdotal evidence. More recently, scholars have noted the relevance of conducting RL research based on theoretical basis (Daugherty et al., 2002; Guide and Van Wassenhove, 2003; Toffel, 2004). Extending this line of inquiry, the study suggests a stakeholder approach as a promising framework in which to conduct future research. Second, the article provides empirical evidence from a European perspective since the sample is composed of Spanish firms. Europe has been traditionally more active on issues like environmental activities and regulation (Toffel, 2003). Consequently, an interesting future line of research would be conducting similar analysis from a US perspective to see if the model is applicable outside Europe. Third, this work provides empirical results based on a large-scale study, enhancing the limited evidence of the RL issue. The main limitation, however, is the fact that the research is centered in one industrial sector and, as a consequence, the generalization of the conclusions is limited. Subsequent research could explore whether our theoretical contention is suitable for other contexts. The study exclusively considers whether firms implemented RL programs or not. Thus, the article does not delve into aspects such as the performance of these programs or their impact on organizational dimensions, as in business-to-business relationships. These topics are left for future research.

6.2. Implications for practice

An open debate in the RL literature is related to which stakeholder exerts more pressure on firms to adopt RL activities. While some have suggested that most programs of RL are the results of governmental regulations, others have argued that customers and suppliers are likely to stimulate such activities.

Moreover, there is a common belief among various researchers, that the maximization of the benefits for the shareholders is the principal driver of the RL process. This study suggests that both governmental and some market stakeholders like customers and employees are likely to influence the firm in terms of RL. Nevertheless, it seems that RL initiatives are not being directly used to meet the shareholders needs. As previously recognized, the study cannot generalize based on its results. However, it is important for managers to identify in their environment which stakeholders demand RL activities, and to take a proactive approach to make these activities profitable. RL programs can be of assistance in providing better services to stakeholders, such as customers, who increasingly demand warranties, take-backs, and repairs. Systems of RL can help in complying with regulations, and environmental laws. Consequently, RL may act as a valuable tool in achieving stakeholder satisfaction of the firm and should be taken into account by managers in their strategic agenda.

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Appendix A

Activities selected to the present study

SIC	Activity
3465	Automotive stampings
3519	Internal combustion engines
3537	Tractors, trailers and stackers
3647	Vehicular lighting equipment
3694	Electrical equipment for internal combustion engines
3711	Motor vehicles and passenger car bodies
3713	Truck and bus bodies

(continued on next page)

Appendix A (continued)

SIC	Activity
3714	Motor vehicle parts and accessories
3715	Truck trailers
5012	Automobiles and other motor vehicles
5013	Motor vehicle supplies and new parts

Appendix B

Selected items of the questionnaire^a

Strategic posture

- Proactive passive behavior of firms:
- Normally my firm begins the action and the competitor responds to it.
- Usually we are the firm who initially introduces the products.
- Progressive and conservative attitude:
- In my organization the managers actively look for ...
- Competitive advantages.
- The satisfaction of the stakeholders (customer, suppliers, government, shareholders, the community).
- New ideas.

Stakeholder salience.

- (with respect to customer, suppliers, government, shareholders, the community):
- This group had the power to enforce its claims.
- The claims of this particular stakeholder group were viewed by our management team as legitimate.
- (Appropriate).
- This group shows too much insistency in relation to their demand.

^a Original language: Spanish.

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